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**AP Biology Metabolism: Energy and Enzymes Outline (Ch.6)**

*Vocabulary*: Define in your own words

Entropy-

Exergonic reactions-

Endergonic reactions-

Metabolism-

Metabolic pathway-

Vitamins-

Chemiosmosis-

*Respond to the following prompts*:

Summarize the first two laws of Thermodynamics. Give an example that illustrates each law of thermodynamics. (4 pts)

Explain the concept of "free energy". What does a negative change in G and a positive change in G value mean? (3 pts).

Why does all life require free energy? Explain. (2 pts)

Where does glucose store its potential energy? Explain. (2 pts)

Compare and contrast oxidation and reduction (redox) reactions. (2 pts)

How do enzymes lower activation energy and increase reaction rates? (2 pts)

***ABOUT THE READING:***

Write three things that you learned about Metabolism*:*

***Make sure to write a full sentence.***

*Example: I learned that the all life requires free energy in order to live, which is basically leftover energy that is available to do work after chemical reactions have occurred.*

*1.*

*2.*

*3.*

***Assigned Work:***

*FREE ENERGY CONCEPT MAP:*

Using the Inspiration Maps App, create a concept map that uses the concepts of metabolism and cellular free energy to justify the claim that all living things require "free energy".

Suggested concepts to include in your concept map:

* Cells and Entropy (2 pts)
* ATP; Structure and Cycle (2 pts)
* Coupled Reactions (2 pts)
* Enzymes; Enzyme-Substrate Complex and Energy of Activation (2 pts)
* Factors Affecting Enzymatic Speed (2 pts)
* Enzyme Inhibition (2 pts)
* ATP production (2 pts)

Your task to is to elaborate on these terms/concepts and demonstrate an understanding of how these concepts relate to each other in a concept map. Worth 20 pts total; 14 for concepts and 6 pts for appropriate connections of concepts in concept map.